METEER LAKE

LaGrange County

2006 Fish Management Report

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EXECUTIVE SUMMARY

- A general lake survey was conducted on Meteer Lake on June 21 through 22, 2005. Water chemistry and aquatic vegetation data were also collected.

- The Secchi disk reading at Meteer Lake was 17 ft and dissolved oxygen concentrations were not adequate for fish survival below 16 ft. Submersed vegetation was found to a maximum depth of 14 ft. Chara dominated the plant population. Variable pondweed and Illinois pondweed were found frequently throughout the lake.

- A total of 237 fish representing seven species were collected during this survey. Bluegill ranked first by number, followed by redear and largemouth bass. Bowfin was the dominant species collected by weight followed by largemouth bass, redear and bluegill.

- Bluegill, redear and largemouth bass all grew at an average rate for northern Indiana natural lakes. Largemouth bass abundance was low compared to similar size natural lakes but appeared to be increasing.

- Recommendations:

    - An aquatic plant management program should be implemented by the IDNR and or LaGrange County Park Department to control invasive exotic plants in Meteer Lake and its associated wetlands.

    - The IDNR and LaGrange County Park Department should partner to construct brush pile fish attractors, especially near areas where shoreline fishing areas and piers are being considered by the county.

    - The IDNR should add this previously renovated lake to the biannual channel catfish stocking list.

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INTRODUCTION

Meteer Lake is an 18-acre natural lake located approximately two miles east of Howe, Indiana in LaGrange County. It has an average depth of 8 feet and a maximum depth of 18 feet. There is one small inlet to Meteer Lake located in the northwest corner of the lake that originates from a wetland. There is no outlet. A small dirt and gravel boat ramp is located on the south side of the lake off of State Road 120. However, very little parking space is available because of the close proximity of the ramp to State Road 120.

In December of 2004 the LaGrange County Park Department acquired Pine Knob Conservation Club, a property comprised of 59 acres and including the entire Meteer Lake shoreline. The LaGrange County Park Department is presently working with the Indiana Department of Natural Resources, Division of Fish and Wildlife (DFW) to develop a boat ramp on the west shore of the lake near the old conservation club building which is currently being remodeled. Some of the other park improvements planned include a trail system and a shoreline fishing pier. Aside from the existing building, future ramp site and the small area of the lake that borders State Road 120, the shoreline is natural, consisting of woods and emergent wetland plants.

The initial fisheries survey of Meteer Lake was conducted in 1959 by DFW biologists. The purpose of this survey was to evaluate the quality of the sport fishery. The major sport fish collected were bluegill, largemouth bass and redear (Table 1). A subsequent survey conducted in 1968 revealed poor species composition due to the presence of several undesirable sunfish species as well as slow growth rates for bluegill. As a result, the fish population of Meteer Lake was eradicated in the fall of 1969 and it was restocked with bluegill, largemouth bass, redear and channel catfish. Additional surveys in 1973 and 1979 found the fish population was in good condition, although the channel catfish stocking failed. In an attempt to provide additional fishing opportunities, the DFW stocked Meteer Lake with 300 northern pike in October of 1979. A follow up pike spot check survey was conducted in 1980 and six pike were collected. Since that time, general surveys were conducted in 1984 and 1995. The current survey was conducted to evaluate fish population changes since the last survey.

METHODS

This survey was conducted on June 21 and 22, 2006 as part of DFW Work Plan 204755 that covers management of fish populations in natural lakes. Several physical and chemical characteristics of the water were measured in the deepest area of the lake according to the Manual of Fisheries Survey Methods (2001) standard lake survey guidelines. Submersed aquatic vegetation was sampled on August 1, 2006 using methods outlined in the Tier II Aquatic Vegetation Survey Protocol developed by the DFW Lake and River Enhancement Program and used in their aquatic vegetation control grant program. A global positioning system (GPS) device was used to record the location of the limnological data collection site, aquatic vegetation sample sites, and fish collection sites.

Fish were collected by pulsed D.C. electrofishing the shoreline at night with two dippers for 0.5 hours. One trap net and one experimental-mesh gill net were also fished overnight for two nights. All fish collected were measured to the nearest 0.1 in TL. Length-weight regression equations for Fish Management District 2 were used to estimate the weight of all fish within the sample. Five scale samples per half-inch group were collected from game species for age and growth analysis. Average length-at-age for these species was estimated using the Fraser-Lee method of back calculation and standard intercepts (DeVries and Frie 1996, Carlander 1982).

RESULTS

The Secchi disk reading at Meteer Lake was 17 ft and dissolved oxygen concentrations were not adequate for fish survival below 17 ft. Thirty sites were randomly sampled during the plant survey, 26 of which fell within the littoral zone in water 14 ft in depth or less. A total of four native and one exotic species were identified. Aquatic plants were observed at 24 of the 26 littoral sites sampled. The maximum number of plant species found at one site was three and the mean was two. Chara was the dominant plant collected followed by Illinois pondweed and Variable pondweed. Five emergent, floating or floating leaf plants associated with wetlands, arrow arum, cattails, pickerelweed, spatterdock and white water lily, were also observed.

A total of 237 fish representing seven species were collected from Meteer Lake in 2006. Numerically, bluegill was the top species collected (45%) followed by redear (24%) and largemouth bass (19%). Bowfin was the dominant species collected by weight (35%) followed by largemouth bass (29%), redear (18%) and bluegill (13%).

Bluegill ranked first by number (45%) and fourth by weight (13%) among all species collected during this survey. The 107 bluegills collected ranged in length from 1.3 (age 1) to 8.3 (age 5) in TL and averaged 4.0 in TL. They weighed approximately six pounds. During electrofishing bluegills were collected at a rate of 146 fish per hour. No bluegills were collected during gill netting, while trap netting yielded 17 bluegills per lift. Bluegill 6.0-in TL or larger, considered harvestable size, comprised only 13% of the sample, reaching this size during their third year of life. All age groups of bluegill grew at an average rate for northern Indiana natural lakes. Bluegill collections from previous surveys ranged from a high of 510 in 1995 to a low of 105 in 1968. Harvestable size bluegill comprised 14% of the sample in 1995 which was a substantial increase from the 3% collected in the 1984.

A total of 57 redear weighing approximately 10 pounds were collected. Redear ranked second numerically, comprising 24% of the sample, and third by weight (18%). They ranged in length from 2.2 (age 1) to 9.1 (age 5) in TL and averaged 5.9 in TL. Harvestable size redear (6 in TL or larger) comprised 58% of the sample. Redear grew at an average rate for northern Indiana natural lakes. A total of 118 redear comprising 16% of the sample were collected in 1995. Approximately 56% of these fish were harvestable size.

Largemouth bass ranked third numerically (19%) and second by weight (29%). They ranged in length from 3.8 (age 1) to 14.1 (age 5) in TL and averaged 8.3 in TL. In total, 45 largemouth bass weighing approximately 15 pounds were collected. Only one legal size largemouth bass (14-in TL or larger) was collected during this survey, comprising 2% of the sample. Largemouth bass grew at an average rate for northern Indiana natural lakes. Bass in 1984 and 1995 comprised 9% and 7% of the samples by number respectively. Legal size bass have been scarce in Meteer Lake surveys over the years, with the number collected ranging from one fish to five and averaging three per survey.

The only other sport species collected during the current survey was yellow perch. A total of six perch were collected, the largest of which measured 7.7 in TL.

DISCUSSION

Meteer Lake's sport fish population is dominated by bluegill and largemouth bass with redear providing some additional angling opportunities. Approximately 88% of the fish sample was comprised of these three species numerically and they represented 59% of the sample by

weight. Although overall fish numbers continue to stay low due to the relatively unproductive characteristics of the lake, it has a satisfactory fishery and is popular with anglers.

All ages of bluegill grew at an average rate for northern Indiana natural lakes, an improvement over both the 1995 survey when growth of older bluegill was below average and 1984 when all age groups of bluegill grew at a below average rate. Despite these improvements in growth, the percentage of harvestable size fish did not increase. In fact, it dropped slightly from 14% in 1995 to 13% during the current survey. Both were, however, much better than the 1984 level of 3%.

Largemouth bass continue to be present in small numbers in Meteer Lake but the low overall number of bass combined with a scarcity of legal size bass probably does not make this fishery very desirable for bass anglers.

Redear are present in numbers and sizes sufficient to provide an adequate fishery. Combined with bluegill, they represent the bulk of fishing opportunities at Meteer Lake. The percentage of harvestable size redear is much better than that for bluegill at 58% and represents a slight increase from 1995 when 56% were harvestable size.

It should be noted that fish sampling in Meteer Lake in 1995 and 2006 was difficult due to water clarity. While electrofishing it was common to see larger bluegill and bass along the bottom in 8 to 9 feet of water outside of the effective electrofishing field.

The abundance of native aquatic vegetation in Meteer Lake is relatively low and poses no threat to interfere with angling activities. There are a few isolated patches of Eurasian watermilfoil throughout the lake, a plant that is considered an exotic nuisance species. One large patch is located directly in front of the small path leading from the existing boat ramp where boats must pass through it to reach open water. No doubt as boats navigate through this patch of milfoil it is fragmented, creating an opportunity for these fragments to drift and re-attach, thereby spreading this noxious weed. Chemically controlling the patches of milfoil would reduce the possibility of this happening.

The water quality at Meteer Lake is considered good. No fish diseases or parasites were observed during the survey. Shoreline erosion was minimal.

RECOMMENDATIONS

- An aquatic plant management program should be implemented by the IDNR and or LaGrange County Park Department to control invasive exotic plants in Meteer Lake and its associated wetlands.

- The IDNR and LaGrange County Park Department should partner to construct brush pile fish attractors, especially near areas where shoreline fishing areas and piers are being considered by the county.

- The IDNR should add this previously renovated lake to the biannual channel catfish stocking list.

LITERATURE CITED

Carlander, KD. 1982. Standard intercepts for calculating length from scale measurements for some centrarchid and percid fishes. Transactions of the American Fisheries Society 111:332-336.

DeVries, DR and RV Frie. 1996. Determination of Age and Growth. Pages 483-512 *in* B. R. Murphy and D. W. Willis, editors. Fisheries techniques, 2nd edition. American Fisheries Society, Bethesda, Maryland.

Submitted by: Larry A. Koza, Assistant Fisheries Biologist
Date: 2/12/07

Approved by: Stuart Shipman
North Region Fisheries Supervisor
Date: 2/12/07

Table 1. Sampling effort, species composition and relative abundance of fish collected during 1968, 1973, 1979, 1984, 1995 and 2006 fisheries surveys of Meteer Lake.

Species	1968	1973	1979	1984	1995	2006
Bluegill	105	151	166	488	510	107
Bowfin			28	9	12	12
Central mudminnow		1				
Grass pickerel	1	10		4	1	
Green sunfish			1	5	9	
Hybrid sunfish					3	
Lake chubsucker	16	64	26	19	1	
Largemouth bass	21	52	23	47	69	45
Northern pike				11		
Pumpkinseed	4	11			3	
Redear	35	94	62	52	118	57
Warmouth					21	7
Yellow bullhead	4	46	28	19	5	3
Yellow perch			9	53	10	6
Total	185	429	343	691	762	237
Sampling Effort						
Electrofishing Effort	1.0 h AC	1.0 h AC	1.0 h AC	0.5 h DC	0.5 h DC	0.5 h DC
Gill Net Effort	2 lifts	4 lifts	8 lifts	4 lifts	4 lifts	2 lifts
Trap Net Effort	20 lifts*	0	9 lifts	4 lifts	4 lifts	2 lifts

*Wire traps

Table 2. Relative abundance by select size ranges for bluegill and largemouth bass collected during 1968, 1973, 1979, 1984, 1995 and 2006 fisheries surveys of Meteer Lake.

Species	Length Range (TL)	1968	1973	1979	1984	1995	2006
Bluegill	3.0-5.5 in	104	130	89	419	377	62
	6.0-6.5 in	1	15	30	14	63	8
	7.0-7.5 in	0	4	7	0	6	3
	≥ 8.0 in	0	2	0	0	1	3
Largemouth bass	8.0-9.5 in	2	12	3	1	36	12
	10.0-11.5 in	1	0	4	1	3	4
	12.0-13.5 in	0	1	2	9	2	5
	14.0-17.5 in	2	1	2	5	2	1
	≥ 18.0 in	0	0	2	0	2	0

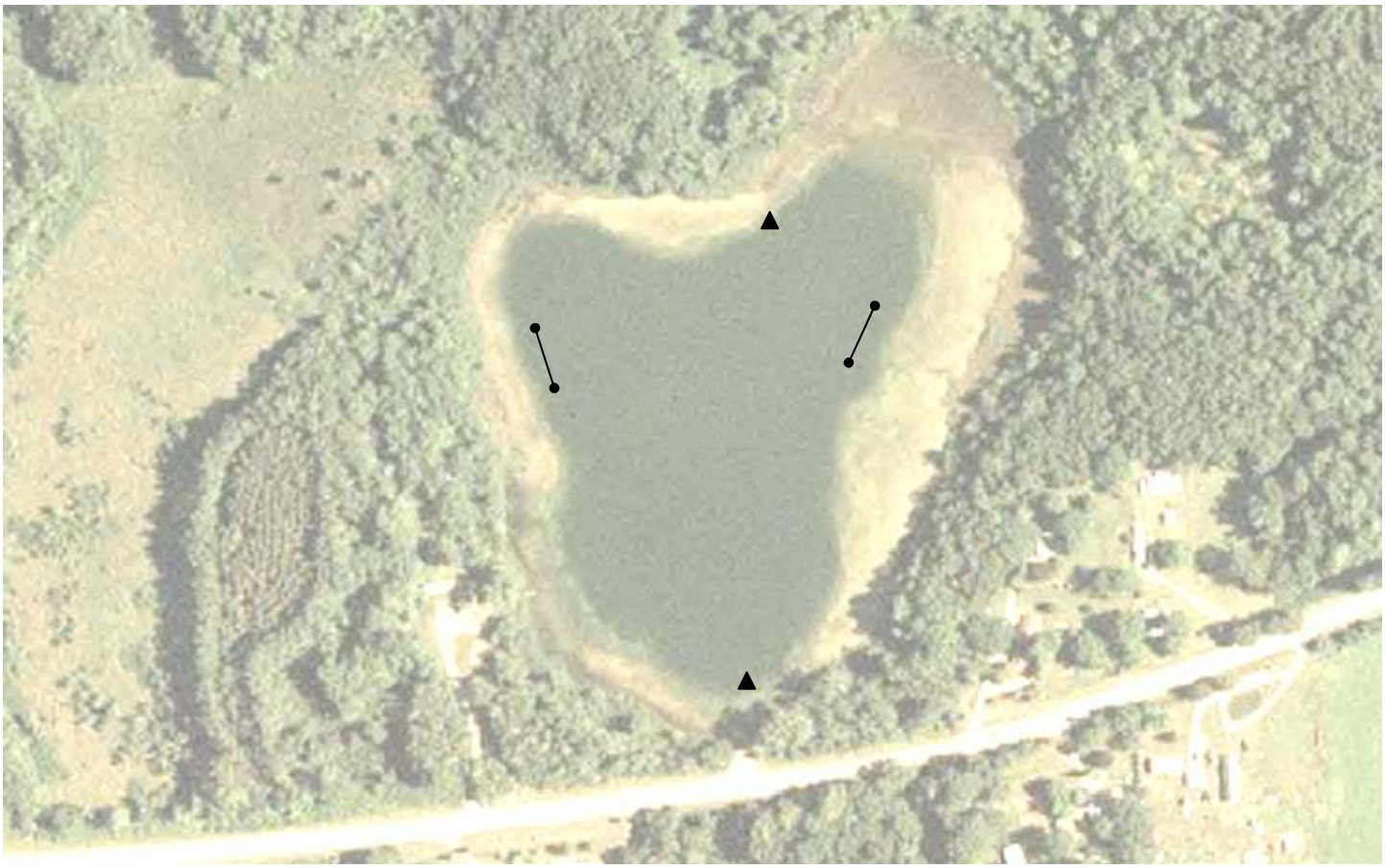

Figure 1. Aerial photo of Meteer Lake with sample locations.

APPENDIX 1. Survey data pages

LAKE SURVEY REPORT

Type of Survey: [ ] Initial Survey [X] Re-Survey

Lake Name	County	Date of survey (Month, day, year)
Meteer Lake	LaGrange	June 21-22, 2006
Biologist's name		**Date of approval (Month, day, year)**
Neil D. Ledet and Larry A. Koza		February 12, 2007

LOCATION

Quadrangle Name	Range		Section
Mongo	10E		28
Township Name	**Nearest Town**		
38N	Brighton, Indiana		

ACCESSIBILITY

State owned public access site	Privately owned public access site	Other access site
		Access off SR 120 easement

Surface acres	Maximum depth	Average depth	Acre feet	Water level	Extreme fluctuations
18	18 ft.	8.3 ft.	149.4	878.4 ft.	None

Location of benchmark

INLETS

Name	Location	Origin
Unnamed	Northwest	Wetland

OUTLETS

Name	Location
None	

Water level control: None

POOL	ELEVATION (Feet MSL)	ACRES
TOP OF DAM		
TOP OF FLOOD CONTROL POOL		
TOP OF CONSERVATION POOL		
TOP OF MINIMUM POOL		
STREAMBED		

Bottom type

- [ ] Boulder
- [ ] Gravel
- [ ] Sand
- [ ] Muck
- [ ] Clay
- [X] Marl

Watershed use: General farming, wetland

Development of shoreline: 5% County Park

Previous surveys and investigations: U.S.G.S. Hydrographic Survey 1959: IDNR Fisheries Surveys; Weaver, 1959; Hudson, 1969; Peterson, 1973, 1979, 1980; Ledet, 1984; Koza, 1995.

SAMPLING EFFORT					
ELECTROFISHING	Day hours		Night hours 0.5		Total hours 0.5
TRAP NETS	Number of traps 2		Number of Lifts 1		Total effort 2
GILL NETS	Number of nets 2		Number of Lifts 1		Total effort 2
ROTENONE	Gallons	ppm	Acre Feet Treated	SHORELINE SEINING	Number of 100 Foot Seine Hauls

PHYSICAL AND CHEMICAL CHARACTERISTICS	
Color: Light green	Turbidity: 17 Feet 0 Inches (SECCHI DISK)
Alkalinity (ppm)* Surface: 205.9 Bottom: 171.6	pH Surface: 9.2 Bottom: 9.2
Conductivity: 290 micromhos	Air temperature: °F
Water chemistry GPS coordinates: N 41.71971	W 85.37289

TEMPERATURE AND DISSOLVED OXYGEN (D.O.)								
DEPTH (FEET)	Degrees (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)	DEPTH (FEET)	DEGREES (°F)	D.O. (ppm)
SURFACE	77.0	9.8	36			72		
2	76.5	9.8	38			74		
4	76.3	9.8	40			76		
6	75.9	10.1	42			78		
8	75.2	10.7	44			80		
10	74.8	11.8	46			82		
12	73.8	13.4	48			84		
14	72.9	12.9	50			86		
16	71.8	7.2	52			88		
18	71.4	1.0	54			90		
20			56			92		
22			58			94		
24			60			96		
26			62			98		
28			64			100		
30			66					
32			68					
34			70					

COMMENTS

*ppm-parts per million

SPECIES AND RELATIVE ABUNDANCE OF FISHES COLLECTED BY NUMBER AND WEIGHT					
*COMMON NAME OF FISH	NUMBER	PERCENT	LENGTH RANGE (inches)	WEIGHT (pounds)	PERCENT
Bluegill	107	45.1	1.3 - 8.3	6.84	12.8
Redear	57	24.1	2.2 - 9.1	9.50	17.8
Largemouth bass	45	19.0	3.8 - 14.1	15.64	29.3
Bowfin	12	5.1	11.7 - 21.4	18.83	35.3
Warmouth	7	3.0	2.9 - 5.7	0.33	0.6
Yellow perch	6	2.5	6.5 - 7.7	0.78	1.5
Yellow bullhead	3	1.3	9.1 - 10.5	1.41	2.6
Total (7 Species)	237			53.33	

*Common names of fishes recognized by the American Fisheries Society.

**Less than 0.1 percent

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF BLUEGILL									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5	4	3.7	0.01	1	19.5				
2.0	7	6.5	0.01	1	20.0				
2.5	20	18.7	0.01	1,2	20.5				
3.0	15	14.0	0.02	2	21.0				
3.5	11	10.3	0.03	2,3	21.5				
4.0	6	5.6	0.04	2,3	22.0				
4.5	7	6.5	0.05	3	22.5				
5.0	11	10.3	0.07	3	23.0				
5.5	12	11.2	0.09	3	23.5				
6.0	6	5.6	0.12	3	24.0				
6.5	2	1.9	0.15	4	24.5				
7.0	1	0.9	0.19	4,5	25.0				
7.5	2	1.9	0.25	4,5	25.5				
8.0	2	1.9	0.34	4,5	26.0				
8.5	1	0.9	0.36	5	TOTAL	107			
9.0									
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	146.0/hr	GILL NET CATCH	0.0/lift	TRAP NET CATCH	17.0/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF REDEAR									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0	2	3.5	0.01	1	20.0				
2.5	3	5.3	0.01	1	20.5				
3.0					21.0				
3.5	2	3.5	0.03	2	21.5				
4.0	2	3.5	0.05	2,3	22.0				
4.5	2	3.5	0.06	2,3	22.5				
5.0	7	12.3	0.09	3	23.0				
5.5	6	10.5	0.11	3,4	23.5				
6.0	8	14.0	0.15	3,4	24.0				
6.5	5	8.8	0.22	4	24.5				
7.0	11	19.3	0.22	4	25.0				
7.5	5	8.8	0.27	4	25.5				
8.0					26.0				
8.5	2	3.5	0.39	4	TOTAL	57			
9.0	2	3.5	0.53	5					
9.5									
10.0									
10.5									
11.0									
11.5									
12.0									
12.5									
13.0									
13.5									
14.0									
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	26.0/lift	GILL NET CATCH	1.0/lift	TRAP NET CATCH	21.0/lift

NUMBER, PERCENTAGE, WEIGHT, AND AGE OF LARGEMOUTH BASS									
TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH	TOTAL LENGTH (inches)	NUMBER COLLECTED	PERCENT OF FISH COLLECTED	AVERAGE WEIGHT (pounds)	AGE OF FISH
1.0					19.0				
1.5					19.5				
2.0					20.0				
2.5					20.5				
3.0					21.0				
3.5					21.5				
4.0	3	6.7	0.03	1	22.0				
4.5	3	6.7	0.04	1	22.5				
5.0	1	2.2	0.06	1	23.0				
5.5					23.5				
6.0					24.0				
6.5	4	8.9	0.11	2	24.5				
7.0	6	13.3	0.14	2	25.0				
7.5	6	13.3	0.17	2	25.5				
8.0					26.0				
8.5	3	6.7	0.26	2	TOTAL	45			
9.0	1	2.2	0.29	2					
9.5	8	17.8	0.34	2,3					
10.0									
10.5	2	4.4	0.42	3					
11.0	1	2.2	0.62	3					
11.5	1	2.2	0.68	4					
12.0	2	4.4	0.80	4					
12.5	1	2.2	0.91	4					
13.0	1	2.2	1.02	4					
13.5	1	2.2	1.21	4					
14.0	1	2.2	1.28	5					
14.5									
15.0									
15.5									
16.0									
16.5									
17.0									
17.5									
18.0									
18.5									

ELECTROFISHING CATCH	80.0/hr	GILL NET CATCH	2.5/lift	TRAP NET CATCH	0/lift

Species	YEAR CLASS	NUMBER OF FISH AGED	SIZE RANGE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Bluegill				I	II	III	IV	V	VI	VII	VIII
Intercept = 0.8	2005	4	2.2 - 2.6	1.9							
	2004	12	2.7 - 4.1	1.4	2.7						
	2003	17	3.6 - 5.9	1.4	2.5	4.3					
	2002	6	6.5 - 8.2	1.6	2.9	4.6	6.7				
	2001	2	7.2 - 8.3	1.4	2.3	3.7	5.3	7.4			
	AVERAGE LENGTH			1.6	2.7	4.4	6.7				
	NUMBER AGED			41	37	25	8	2			

Species	YEAR CLASS	NUMBER OF FISH AGED	SIZE RANGE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Redear				I	II	III	IV	V	VI	VII	VIII
Intercept = 0.6	2005	5	2.2 - 2.6	1.8							
	2004	4	3.3 - 4.3	1.4	3.1						
	2003	11	4.2 - 6.2	1.3	2.6	4.7					
	2002	7	5.7 - 8.5	1.4	2.6	4.3	6.2				
	2001	1	8.9 - 8.9	1.7	2.5	4.0	5.9	7.9			
	AVERAGE LENGTH			1.5	2.8	4.5	6.2				
	NUMBER AGED			28	23	19	8	1			

Species	YEAR CLASS	NUMBER OF FISH AGED	SIZE RANGE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
Largemouth bass				I	II	III	IV	V	VI	VII	VIII
Intercept = 0.8	2005	6	3.8 - 4.8	3.1							
	2004	26	6.4 - 9.7	3.2	6.7						
	2003	4	9.5 - 10.5	3.2	7.5	9.2					
	2002	3	11.5 - 13.7	4.1	7.3	9.0	10.8				
	AVERAGE LENGTH			3.4	7.2	9.1	10.8				
	NUMBER AGED			39	33	7	3				

Species	YEAR CLASS	NUMBER OF FISH AGED	SIZE RANGE	BACK CALCULATED LENGTH (inches) AT EACH AGE							
				I	II	III	IV	V	VI	VII	VIII
Intercept =											
	AVERAGE LENGTH										
	NUMBER AGED										

*Not included in average length calculations.

GILL NETS			TRAP NETS			ELECTROFISHING		
1	N 41.71958	W 85.37068	1	N 41.71777	W 85.37165	1	N	W
	N	W	2	N 41.72010	W 85.37123		N	W
2	N 41.71946	W 85.37313	3	N	W	2	N	W
	N	W	4	N	W		N	W
3	N	W	5	N	W	3	N	W
	N	W	6	N	W		N	W
4	N	W	7	N	W	4	N	W
	N	W	8	N	W		N	W
5	N	W	9	N	W	5	N	W
	N	W	10	N	W		N	W
6	N	W	11	N	W	6	N	W
	N	W	12	N	W		N	W
7	N	W	13	N	W	7	N	W
	N	W	14	N	W		N	W
8	N	W	15	N	W	8	N	W
	N	W	16	N	W		N	W
9	N	W	17	N	W	9	N	W
	N	W	18	N	W		N	W
10	N	W	19	N	W	10	N	W
	N	W	20	N	W		N	W
11	N	W				11	N	W
	N	W					N	W
12	N	W				12	N	W
	N	W					N	W
13	N	W				13	N	W
	N	W					N	W
14	N	W				14	N	W
	N	W					N	W
15	N	W				15	N	W
	N	W					N	W
16	N	W				16	N	W
	N	W					N	W
17	N	W				17	N	W
	N	W					N	W
18	N	W				18	N	W
	N	W					N	W
19	N	W				19	N	W
	N	W					N	W
20	N	W				20	N	W
	N	W					N	W

Occurrence and Abundance of Submersed Aquatic Plants

Date:	8/1/06	Littoral sites with plants:	24	Species diversity:	0.63
Littoral depth (ft):	14.0	Number of species:	5	Native diversity:	0.63
Littoral sites:	26	Maximum species/site:	3	Rake diversity:	0.50
Total sites:	30	Mean number species/site:	1.65	Native rake diversity:	0.50
Secchi:	13.0	Mean native species/site:	1.65	*Mean rake score:	0.50

Common Name	Site frequency	Relative density	Mean density	Dominance
Bladderwort	7.7	0.08	1.00	1.5
Chara	92.3	2.04	2.21	40.8
Eurasian Watermilfoil	11.5	0.15	1.33	3.1
Illinois Pondweed	26.9	0.38	1.43	7.7
Variable Pondweed	26.9	0.31	1.14	6.2

Other Observed Plants

White waterlily, spatterdock, pickerelweed, cattail, arrowhead, sago pondweed